

Appl. No. 09/721,056
Amdt. Dated: August 11, 2003
Reply to Office Action of April 10, 2003

Attorney Docket No. 81784.0215
Customer No.: 26021

REMARKS/ARGUMENTS

Claims 19, 21-28 and 30-76 are pending in the Application. By this Amendment, claims 19, 28, 37, 46, 54, 62, 63 and 71-76 are being amended to improve their form. No new matter is involved. Entry of the amendment under the provisions of 37 C.F.R. § 1.116 as placing the application in condition for allowance or alternatively in better form for appeal, and reconsideration and allowance in view thereof, are respectfully requested.

In Paragraph 1 which begins on page 2 of the Final Office Action, claims 19, 21-28 and 30-70 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent 5,408,345 of Mitsui et al. in view of U.S. Patent 5,309,264 of the Lien et al. Mitsui et al. is said to show most of the claim limitations but not the orientation dividing window. In this connection, Lien is said to describe a liquid crystal display wherein the orientation direction of liquid crystal is divided by weak electric fields and/or electric fields in a sloped direction generated by the orientation control window. According to the Office Action, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the liquid crystal display of Mitsui to have the orientation dividing windows of Lien so that multiple domains can be created and thus increase the aperture ratio. In Paragraph 2 on page 3 of the Office Action with respect to dependent claims 21-23, 25, 30-32, 34, 39-41, 43, 47-49, 51-53, 55-57, 59-61, 64-66, 68 and 69, Mitsui is said to teach that the interlayer insulation layer is about 2 µm, such that it is at least 0.5 µm. In Paragraph 3 on page 3 of the Office Action with respect to dependent claims 24, 26, 27, 33, 35, 36, 42, 44, 45, 50, 58, 67 and 70, Mitsui is said to show the pixel electrode 38. These rejections are respectfully traversed.

The Mitsui '345 reference describes, in column 10 thereof, that an organic insulating film 42 made of polyimide resin is formed to have a thickness of 2 µm. In

such reference, however, after formation of the organic insulating film 42, such film 42 is selectively etched to make it uneven, so that a reflection electrode formed on the organic insulating film 42 also has an uneven surface for increasing the reflection characteristics of the reflection electrode. Moreover, and in the example shown in Figs. 17(1) to 17(5), after formation of an organic insulating film 142 so as to cover bumps 142a, a reflection electrode 138 is formed on the organic insulating film 142. In this example, and because of uneven portions (concave and convex portions) formed on the top surface of the organic insulating film 142 due to the existence of the bumps 142a, the reflection electrode 138 formed on the organic insulating film 142 also has uneven portions. As described above, in Mitsui the organic insulating film 42, 142 is provided in order to form uneven portions on the top surface of the reflection electrode which is formed on the organic insulating film.

On the other hand, the present invention provides a liquid crystal display apparatus in which the orientation direction of liquid crystal molecules is divided by weak electric fields and is controlled. When the uneven portions are formed on the surface of the reflection electrode as in Mitsui, this would have significant adverse effects on the orientation control of the liquid crystal. Consequently, the present invention is based on a technical concept which is essentially opposite to that of the liquid crystal display apparatus of Mitsui having uneven portions formed on the reflection electrode. More specifically, even if Mitsui describes that the organic insulating film is formed in a thickness of 2 μm , for example, as described above, because the object of forming the organic insulating film is to form uneven portions on the reflection electrode, the significance of the thickness of the organic insulating film of Mitsui is completely different from the significance of the thickness of the inter-layer insulating film of the present invention which is formed under the pixel electrode which "has a substantially flat surface". Therefore, one of ordinary skill in the art would not be motivated to apply the development of Mitsui to other

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references such as Lien or to attempt to combine such references so as to arrive at the present invention, as asserted in the Office Action.

In addition to other limitations which patentably distinguish over the attempted combination of references, each of the independent claims as amended herein recites that the pixel electrode "has a substantially flat surface". Consequently, such independent claims are submitted to clearly distinguish patentably over the prior art. The dependent claims depend from and contain all of the limitations of the independent claims, so that such claims are also submitted to clearly distinguish patentably over the art.

In conclusion, claims 19, 21-28 and 30-76 are submitted to clearly distinguish patentably over the prior art for the reasons discussed above. Therefore, entry of this amendment under the provisions of 37 C.F.R. § 1.116 as placing the application in condition for allowance or alternatively in better form for appeal, and reconsideration and allowance in view thereof, are respectfully requested.

Applicant believes the foregoing amendments comply with requirements of form and thus may be admitted under 37 C.F.R. § 1.116(a). Alternatively, if these amendments are deemed to touch the merits, admission is requested under 37 C.F.R. § 1.116(b). In this connection, these amendments were not earlier presented because they are in response to the matters pointed out for the first time in the Final Office Action.

Lastly, admission is requested under 37 C.F.R. § 1.116(a) as presenting rejected claims in better form for consideration on appeal.

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Reexamination and reconsideration of the application, as amended, are requested.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los

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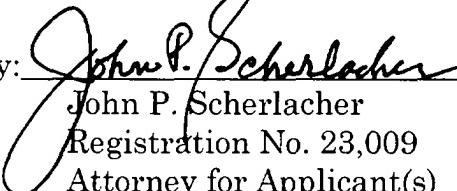
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Angeles, California telephone number (213) 337-6846 to discuss the steps necessary for placing the application in condition for allowance.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-1314.

Respectfully submitted,
HOGAN & HARTSON L.L.P.

Date: August 11, 2003

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